The NALCO 356 is stored in a 2,000 gallon tank near the Heat Recovery Steam Generator. This tank is equipped with continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. NALCO 356 is injected into the water system by metering pumps. The storage tank is equipped with secondary containment. The piping from the tank is doubled walled at key locations outside of containment areas.

The secondary containment system around this tank is about 3 feet high by 10 feet long by 11-feet wide. This area is capable of storing approximately 2,500 gallons or 125 percent of the maximum volume of NALCO 356 in the tank. The containment system is constructed of reinforced concrete with an epoxy-liner. This storage system is equipped with a drain to remove accumulated rainwater buildups, or the area will be manually pumped. If used, the drain will equipped with a manually operated valve located outside of the containment area which is kept in the closed position. Prior to removal, the liquid in the secondary containment basin is tested for the presence of cyclohexylamine. If the test is negative, the water will be removed from the secondary system to the water treatment system.

3.11 NALCO 7280

NALCO 7280 (Location 11) is used for scale control in the Reverse Osmosis Unit. This product contains a 20 to 40 percent concentration of a polyacrylic acid and other proprietary chemicals. Approximately 250 gallons of NALCO 7280 is stored at the facility. This product is used continuously at the facility.

The NALCO 7280 is stored in a tank at the Reverse Osmosis Unit. This tank is equipped with tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. NALCO 7280 is injected into the water system by metering pumps. The storage tank is equipped with secondary containment. The piping from the tank is double-walled at key locations outside of containment areas.

The NALCO 7280 storage vessel at the Reverse Osmosis Unit is surrounded by barriers and sumps to control any accidental discharges of this product to the environment. This sump system will contain the maximum concentration of the volume in the storage vessel. The sump will be equipped with a manually operated drain valve outside of the containment area or the area will be manually drained. If a drain is used, the valve will be kept in a closed position. The liquid in the secondary containment area will be tested prior to removal from system.

3.12 ELIMIN-OX

ELIMIN-OX (Location 12) is used as an oxygen scavenger in the process feedwater system to the deaerator. This product contains carbohydrazide, a nonhazardous material. Approximately 2,000 gallons of ELIMIN-OX is stored in a tank at the facility. This product is used continuously at the facility.

The ELIMIN-OX is stored in a tank near the deaerator. This tank is equipped with tank level monitors (e.g., high and low level), alarms, checks valves, and emergency block valves. ELIMIN-OX is injected into the water system by metering pumps. Additionally, the storage tank is equipped with secondary containment.

The ELIMIN-OX storage vessel is surrounded by barriers and sumps to control any accidental discharges of this product to the environment. This sump system will contain the maximum concentration of the volume in the storage tank. The sump will be manually drained or equipped with a manually operated drain valve located outside of the containment area. This valve will be kept in a closed position. Liquid in the secondary containment area will be tested prior to discharge or pumping.

3.13 NALCO 7408

NALCO 7408 (Location 13) is used as an oxygen scavenger upstream of the Reverse Osmosis Unit. This product contains a 40 to 70 percent solution of sodium bisulfite. Approximately 250 gallons of NALCO 7408 is stored in a tank at the facility. This product is used continuously as an oxygen scavenger for the Reverse Osmosis Unit.

The NALCO 7408 is stored in a tank at the Reverse Osmosis Unit. This tank is equipped with tank level monitors (e.g., high and low level), alarms, checks valves, and emergency block valves. NALCO 7408 is injected into the water system by metering pumps. Additionally, the storage tank is equipped with secondary containment. Piping from the tank is double-walled at exposed locations outside of containment areas.

The NALCO 7408 storage vessel is surrounded by barriers and sumps to control any accidental discharges of this product to the environment. This sump system will contain the maximum concentration of the volume in the storage vessel. The sump is equipped with a manually operated drain valve outside of the containment area, or the area will be manually pumped. If a drain valve is used, it will be kept in a closed position until the liquid is tested. Uncontaminated liquid in the secondary containment area will be removed using the drain or by manually pumping the sump.

3.14 NALCO 22106

NALCO 22106 (Location 14) is used as a chelate injected into the suction of the boiler feed pump. This product contains a sodium plyacrylate and an aryl sulfonate solution. Approximately 2,000 gallons of NALCO 22106 is stored in a tank at the facility. This product is used continuously at the facility. NALCO 7213, described below, can be used as a substitute for NALCO 22106.

The NALCO 22106 is stored in a 2,000 gallon tank near the boiler. This tank is equipped with continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. NALCO 22106 is injected into the water system by metering pumps. The storage tank is equipped with secondary containment. The piping from the tank is double-walled at key locations outside of containment areas.

The secondary containment system around this tank is about 3 feet high by 10 feet long by 11 feet wide. This area is capable of storing approximately 2,500 gallons or 125 percent of the maximum volume of NALCO 22106 in the tank. The containment system is made of reinforced concrete. This storage system is manually pumped or equipped with a drain to remove accumulated rainwater buildups. A drain will be equipped with a manually operated valve located outside of the containment area. The valve will kept in the closed position. Prior to draining, the liquid in the secondary containment basin will be tested for the presence of chemicals found in NALCO 22106. If the test is negative, the water will be removed from the secondary system to the water treatment system.

3.15 Lubricating Oil

Lubricating oils (Location 15) are used for lubricating gas turbines and steam turbine bearings. A maximum of 12,000 gallons can be used or stored at the facility. Most lubricating oils are petroleum hydrocarbon based with high flash points. During normal plant operations, lubricating oils are delivered to the facility in 55-gallon containers and added to the turbines as required. Lubricating oils are used continuously at the power plant.

Some of the lubricating oils are stored at the chemical storage facility area, until needed. These oils are stored with other similar products that do not react with each other. The remaining lubricating oils are contained in the gas and steam turbines for bearing lubrication. These commercial turbines are equipped with a variety of internal controls and alarms for minimizing accidental releases of lubricating oils.

3.16 Number 2 Diesel

No. 2 diesel (Location 16) is used as fuel for the backup fire-pump engine. A maximum of 500 gallons can be stored in the diesel fuel tank of the fire-pump diesel engine. Diesel fuel is a petroleum hydrocarbon with a relatively low flash point. During normal plant operations, diesel fuel is delivered to the facility by tanker truck. Diesel fuel is stored at the facility continuous as a backup fuel for use during emergency operation of the firewater system.

The fire-pump diesel storage tank is a commercially manufactured system. This tank is double-walled to prevent leaks. A sensor and alarm system are located between the tank walls to detect leaks of diesel fuel from the main storage tank area.

3.17 Various Cleaning Chemicals

A variety of cleaning chemicals (Location 17) are used at the facility. Most of these chemicals are used during maintenance and repair of equipment. Approximately 100 gallons can be used or stored at the facility. These cleaning chemicals can be petroleum hydrocarbon or water based. These chemicals can have a range of toxicity and can be flammable with high to low flash points. During normal plant operations, cleaning chemicals are delivered to the facility in 1 to 10 gallon containers. These chemicals are used from their shipping containers or put into cleaning tanks for bulk cleaning of parts and equipment. Cleaning chemicals are used continuously at the power plant.

Some of the cleaning chemicals are stored at the chemical storage facility area until needed. These chemicals are stored with other similar products (hydrocarbon or water based) that do not react with each other. The remaining cleaning chemicals are used in the maintenance shop or at repair locations throughout the facility.

3.18 Various Laboratory Chemicals (Liquids)

A variety of liquid chemicals or reagents (Location 18) are used at the facility. Most of these chemicals are used to perform a chemical test to maintain prescribed levels of water quality at the facility. Most of these chemicals or reagents are used in small quantities, less than one gallon. These chemicals or reagents can have a range of toxicity. These chemicals are delivered to the facility in manufacturers designed containers. Chemicals and reagents are normally used directly from these containers. Chemicals or reagents are used continuously at the power plant.

All of these liquid chemicals are stored in the facility laboratory. These chemicals are stored in specially designed chemical storage lockers with other similar products that do not react with each other. These chemicals are normally used in the laboratory or taken into the field for testing at specific locations.

3.19 Various Laboratory Chemicals (Solids)

Various chemicals or reagents (Location 19) are used at the facility. These chemicals can be in a powder, granular, or bulk form. Most of these chemicals are used to perform a chemical test to maintain prescribed levels of water quality at the facility. Most of these chemicals or reagents are used in small quantities, less than one gallon containers. These chemicals or reagents can have a range of toxicity. The chemicals are delivered to the facility in manufacturer-designed containers or in individual test packets. These chemicals are normally used directly from these containers or packets. Chemicals or reagents are used continuously at the power plant.

All of these solid chemicals are stored in the facility laboratory. These chemicals are stored in specially designed chemical storage lockers with other similar products that do not react with each other. These chemicals are normally used in the laboratory or taken into the field for testing at specific locations.

3.20 Mineral Insulating Oils

Mineral insulating oils (Location 20) are used in the facility transformers and electrical switch gear. A range of 25,000 to 40,000 gallons can be used in the transformers or switches at the facility. Mineral oils normally have high flash points, because they need to resist ignition from electrical arcing. During filling, mineral insulating oils are delivered to the facility by tanker truck. Old or used mineral oil is also removed from the tanks by tanker truck. Mineral oils are used continuously at facility.
Transformers and electrical switch gear are monitored continuously for upset conditions. Additionally, the area around transformers and switch gear are equipped with secondary containment.

The secondary containment system around the transformers and electrical switch gear can contain up to 110 percent of the largest storage vessel volume in the area. These containment systems are made of reinforced concrete. These secondary containment systems are equipped with a drain to remove accumulated rainwater buildups or the area will be manually pumped. If a drainage system is used, it will be equipped with a manually operated valve located outside of the secondary containment system. The valve will be kept in the closed position. Prior to manual removing the liquid in the containment area, it will examined for oily sheens.

3.21 NALCO 7213

NALCO 7213 (Location 21) is used as a chelate injected into the suction of the boiler feed pump. This product contains a tetrasodium ethylenedia-minetetraace-tate solution of 10 to 20 percent and sodium polyacrylate. Approximately 2,000 gallons of NALCO 7213 is stored at the facility. This product is used continuously at the facility. NALCO 22106 can be used as a substitute for NALCO 7213.

The NALCO 7213 is stored in a 2,000 gallon tank near the boiler. This tank is equipped with continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. NALCO 7213 is injected into the water system by metering pumps. The storage tank is equipped with secondary containment. The piping from the tank is double-walled at key locations outside of containment areas.

The secondary containment system around this tank is about 3 feet high by 10 feet long by 11 feet wide. This area is capable of storing approximately 2,500 gallons or 125 percent of the maximum volume of NALCO 7213 in the tank. The containment system is constructed of reinforced concrete. This storage system is equipped with a drain to remove accumulated rainwater buildups. If a drain is not used, the area will be pumped. A drainage system will be equipped with a manually operated valve outside of the secondary containment system. This drain valve will be kept in the closed position. Prior to removal of liquids in the secondary containment area, they will be tested for the presence of chemicals found in NALCO 7213. If the test is negative, the water will be removed by either draining or manually pumping.

3.22 Sodium Hypochlorite

Sodium hypochlorite (Location 22) is used as a biocide for the condenser cooling water system. The concentration of the sodium hypochlorite solution is approximately 10 percent. Sodium hypochlorite is metered into the water system by metering pumps. This chemical is used continuously in the facility.

The sodium hypochlorite is stored in a 6,000 gallon tank. This tank is equipped with continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. Additionally, the storage tank is equipped with secondary containment. The piping from the tank is double-walled at key locations outside of containment areas.

The secondary containment system around this tank is about 4 feet high by 16 feet long by 16 feet wide. This area is capable of storing approximately 7,500 gallons or 125 percent of the maximum volume of the tank. The containment system is constructed of reinforced concrete. This storage system is equipped with a drain to remove rainwater buildups or the area will be pumped. If the a drain is used, it will be equipped with a manually operated valve located outside of the secondary containment area which is kept in the closed position. Prior to draining, the liquid stored in the secondary containment basin will be tested for the presence of sodium hypochlorite. If the test is negative, the water will be manually drained from the secondary system by either opening the drain valve or manually pumping the area..

3.23 Ammonium Bifluoride

Ammonium bifluoride (Location 23) is used to clean the Heat Recovery Steam Generator. A maximum of 200 pounds can be at the facility during this cleaning operation. This product is delivered to the facility in a solid form. This product is mixed with water to form a slurry prior to the cleaning operation. Ammonium bifluoride is used at the plant every 3 to 5 years for cleaning of the generator only. Storage of this chemical at the facility during normal plant operation is not undertaken.

The ammonium bifluoride is brought directly to the Heat Recovery Steam Generator. The ammonium bifluoride is mixed with water to the desired concentration and fed into the Heat Recovery Steam Generator. Precautions are taken during the cleaning operation to prevent or contain any spills. After cleaning, the mixture is removed from the equipment and the facility.

3.24 Sodium Carbonate

Sodium carbonate (Location 24) is used to clean the Heat Recovery Steam Generator. A maximum of 500 pounds can be at the facility during this cleaning operation. This product is delivered to the facility in a solid form. This product is mixed with water at the site to form a slurry prior to the cleaning operation. Sodium carbonate is brought into the plant every 3 to 5 years for cleaning the generator only. Storage of this chemical at the facility during normal plant operation is not undertaken.

The sodium carbonate is brought directly to the Heat Recovery Steam Generator. The sodium carbonate is mixed with water to the desired concentration and fed into the generator. Precautions are taken during the cleaning operation to prevent or contain any spills. After cleaning, the mixture is removed from the equipment and the facility.

3.25 Hydrochloric Acid

Hydrochloric acid (Location 25) is used to clean the Heat Recovery Steam Generator. The hydrochloric acid is in a 30 percent solution. A maximum of 10,000 gallons can be at the facility during the generator cleaning operation. This product is delivered to the facility by tanker truck. Hydrochloric acid is brought into the plant every 3 to 5 years for cleaning the generator only. Storage of this chemical at the facility during normal plant operation is not undertaken.

The hydrochloric acid is brought directly to the Heat Recovery Steam Generator. Precautions are taken during the cleaning operation to prevent or contain any spills. After cleaning, the mixture is removed from the equipment and the facility.

3.26 Citric Acid

Citric acid (Location 26) is also used to clean the Heat Recovery Steam Generator. A maximum of 500 pounds can be at the facility during this cleaning operation. This product is delivered to the facility in a solid form. This product is mixed with water to form a slurry prior to the cleaning operation. Citric acid is used at the plant every 3 to 5 years for cleaning the generator only. Storage of this chemical at the facility during normal plant operation is not undertaken.

The citric acid is brought directly to the Heat Recovery Steam Generator. The citric acid is mixed with water to the desired concentration and fed into the generator. Precautions are taken during the cleaning operation to prevent or contain any spills. After cleaning, the mixture is removed from the equipment and the facility.

3.27 Hydroxy Acetic Acid

Hydroxy acetic acid will be used only during initial cleaning of the heat recovery generator. During operation of the power plant, this chemical will not be used. Therefore, further discussion is not required in this report.

3.28 Formic Acid

Formic acid will be used only during initial cleaning of the heat recovery generator. During operation of the power plant, this chemical will not be used. Therefore, further discussion is not required in this report.

3.29 Hydraulic Oil

Hydraulic oils (Location 27) are used to provide actuating force for steam turbine and combustion turbine (ST and CT) control valves. A maximum of 600 gallons can be used or stored at the facility. Most hydraulic oils are petroleum hydrocarbon based with high flash points. Hydraulic oil is delivered to the facility in 55-gallon containers and added to the ST and CT controls as required. Hydraulic oils are used continuously at the power plant.

Small quantities of hydraulic oils are stored at the chemical storage facility area, until needed. This oil is stored with other similar products that do not react with each other. The remaining hydraulic oil will be contained in the ST and CT control system. These commercial ST and CT controls are equipped with a variety of internal controls and alarms for minimizing accidental releases of hydraulic oil.

3.30 Summary of Chemical Assessment for Potential Pollution of Storm Water

An assessment of potential pollution sources and BMPs for the chemicals used at the plant is provided in **Table 2.** It should be noted that all of these chemical sources are in the main plant area which is paved with concrete or asphalt. Additionally, all of the storm water drains in the main plant discharge all their liquids into the lined evaporation ponds.

Table 2. SUMMARY OF POTENTIAL DISCHARGES AND BEST MANAGEMENT PRACTICES

Area	Activities	Pollution Sources	Pollutant	Best Management Practice
Aqueous Ammonia Tanks	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	Ammonium Hydroxide	Secondary containment around the tanks and pipes. Manual drain of secondary containment after examination. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
Anhydrous Ammonia Refrigeration Unit	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	Anhydrous Ammonia	Commercially designed system. System in special building with alarms to detect leaks. System monitored by control room equipment. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
Sodium Hydroxide Tank	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	50% Sodium Hydroxide Solution	Secondary containment around the tanks and pipes. Manual drain of secondary containment after examination. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.

Table 2. SUMMARY OF POTENTIAL DISCHARGES AND BEST MANAGEMENT PRACTICES

Area	Activities	Pollution Sources	Pollutant	Best Management Practice
Sulfuric Acid Tank	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	93% Sulfuric Acid	Secondary containment around the tanks and pipes. Lined tank to prevent chemical reaction with acid. Manual drain of secondary containment after examination. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
Disodium Phosphate Injection Area	Filling Mixing with water Operation	Overfilling tank Leaks at metering equipment	Di-Sodium Phosphate granules or solution	Sumps around metering area. Small quantities used at one time. Prior to mixing, chemical is in granular solid form. Check and block valves in metering equipment. Metering area in boiler room. Daily inspection by operational personnel. Routine equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
Trisodium Phosphate	Filling Mixing with water Operation	Overfilling tank Leaks at metering equipment	Tri-Sodium Phosphate granules or solution	Sumps around metering area. Small quantities used at one time. Prior to mixing, chemical is in granular solid form. Check and block valves in metering equipment. Metering area in boiler room. Daily inspection by operational personnel. Routine equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.

Table 2. SUMMARY OF POTENTIAL DISCHARGES AND BEST MANAGEMENT PRACTICES

Area	Activities	Pollution Sources	Pollutant	Best Management Practice
Aluminum Sulfate	Filling Mixing with water Operation	Overfilling tank Leaks at metering equipment	Aluminum Sulfate granules and solution	Very low human or environmental toxicity. Small quantities used at one time. Prior to mixing, chemical is in granular solid form. Check and block valves in metering equipment. Metering area in special location near water treatment area. Daily inspection by operational personnel. Routine equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
TRIACT 1800 Storage Tank	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	10 to 20% Cyclohexylamine	Secondary containment around the tanks and pipes. Tank is located in the Heat Recovery Steam Generator building. Manual drain of secondary containment after examination. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
STABREX ST70 Storage Tank	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	1 to 5% Sodium Hydroxide	Secondary containment around the tanks and pipes. Manual drain of secondary containment after examination. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.

Table 2. SUMMARY OF POTENTIAL DISCHARGES AND BEST MANAGEMENT PRACTICES

Area	Activities	Pollution Sources	Pollutant	Best Management Practice
NALCO 356 Storage Tank	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	20 to 40% Cyclohexylamine 5 to 10% Morpholine	Secondary containment around the tanks and pipes. Tank is located in the Heat Recovery Steam Generator building. Manual drain of secondary containment after examination. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
NALCO 7280 Storage Tank	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	20 to 40% Polyacrylic Acid Other Proprietary Chemicals	Secondary containment around the tanks and pipes. Small quantities used (250 gallons). Tank is located in the Reverse Osmosis area. Manual drain of secondary containment after examination. Check and block valves in metering system. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
ELIMIN-OX Storage Tank	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	Carbohydrazide Amino Compounds	Berms or sumps around the tanks and pipes. Very low human and environmental toxicity. Manual drain of secondary containment after examination. Check and block valves in metering system. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.

Table 2. SUMMARY OF POTENTIAL DISCHARGES AND BEST MANAGEMENT PRACTICES

Area	Activities	Pollution Sources	Pollutant	Best Management Practice
NALCO 7408 Storage Tank	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	40 to 70% Sodium Bisulfite	Secondary containment around the tanks and pipes. Small quantities used (250 gallons). Tank is located in the Reverse Osmosis area. Manual drain of secondary containment after examination. Check and block valves in metering system. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
NALCO 22106	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	Sodium Plyacrylate Aryl Sulfonate	Secondary containment around the tanks and pipes. Located in boiler room. Manual drain of secondary containment after examination. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
Lubricating Oil Storage Tanks	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	High Flash Point Petroleum Hydrocarbon-Based Oil	Secondary containment around the tanks and pipes. Located in turbine buildings. Manual drain of secondary containment after examination. Tank and equipment monitored in control room. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel, HAZMAT teams, and SPCC Plan. Storm water drains go to evaporation ponds.

Table 2. SUMMARY OF POTENTIAL DISCHARGES AND BEST MANAGEMENT PRACTICES

Area	Activities	Pollution Sources	Pollutant	Best Management Practice
Number 2 Diesel Storage Tank for Backup Fire Pump	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	Diesel Oil	Commercially manufactured system. Relatively small quantities used (500 gallons). Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
Various Cleaning Chemicals	Maintenance Operations	Spills from containers	Various Hydrocarbon and Water-Based Liquids	Small quantities used at one time (1 to 5 gallons). Used throughout the plant and in maintenance building. Training of maintenance personnel and HAZMAT teams. Storm water drains in plant go to evaporation ponds.
Various Laboratory Chemical (Liquids)	Chemical Analysis	Spills from containers	Various Liquids - Ranging from Organic to Non-Organic Solutions	Very small quantities used at one time (less than a pint). Used in controlled laboratory area. Laboratory technicians trained and HAZMAT teams.
Various Laboratory Chemicals (Solids)	Chemical Analysis	Spills from containers	Various Solids - Ranging from Basic/Acid to Metal-Based Materials	Very small quantities used at one time. Solid form so does not spread. Used in controlled laboratory area. Laboratory technicians trained and HAZMAT teams.
Mineral Insulating Oil Transformers/ Switch Gear	Filling Operation	Overfilling tank Rupture of tank through arcing Leaks from valves	Mineral-Based Oils	Secondary containment around the electrical gear. Specifically manufactured equipment. Manual drain of secondary containment after examination. Electrical equipment operation monitored in control room. Daily inspection by operational personnel. Routine maintenance schedule. Training of operational personnel, HAZMAT teams, and SPCC Plan. Storm water drains go to evaporation ponds.

Table 2. SUMMARY OF POTENTIAL DISCHARGES AND BEST MANAGEMENT PRACTICES

Area	Activities	Pollution Sources	Pollutant	Best Management Practice
NALCO 7213	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	10 to 20% Solution of Tetrasodium Ethylenedia-minetetraace-tate and Sodium Polyacrylate	Secondary containment around the tanks and pipes. Located in boiler room. Manual drain of secondary containment after examination. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
Sodium Hypochlorite Storage Tank	Filling Operation	Overfilling tank Tank leaks Leaks from valves, pipes, etc.	10% Bleach Solution	Secondary containment around the tanks and pipes. Manual drain of secondary containment after examination. Check and block valves in pipes. High and low level alarms on tanks. Daily inspection by operational personnel. Routine tank and equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.
Ammonium Bifluoride Cleaning Operations	Maintenance of Heat Recovery Steam Generator	Mixing operations Spills from containers Spills from cleaning equipment	Ammonium Bifluoride	Very low human and environmental toxicity. Used once every 3 to 5 years to clean Heat Recovery Steam Generators. Training personnel for this operation. HAZMAT teams at the site. Storm water drains in plant go to evaporation ponds.
Sodium Carbonate Cleaning Operations	Maintenance of Heat Recovery Steam Generator	Mixing Operations Spills from containers Spills from cleaning equipment	Sodium Carbonate	Very low human and environmental toxicity. Used once every 3 to 5 years to clean Heat Recovery Steam Generators. Training personnel for this operation. HAZMAT teams at the site. Storm water drains in plant go to evaporation ponds.

Table 2. SUMMARY OF POTENTIAL DISCHARGES AND BEST MANAGEMENT PRACTICES

Area	Activities	Pollution Sources	Pollutant	Best Management Practice
Hydrochloric Acid Cleaning Operations	Maintenance of Heat Recovery Steam Generator	Spills from containers Spills from cleaning equipment	30% Hydrochloric Acid	Used once every 3- to 5-years to clean Heat Recovery Steam Generators. Training personnel for this operation. HAZMAT teams at the site. Storm water drains in plant go to evaporation ponds.
Citric Acid Cleaning Operations	Maintenance of Heat Recovery Steam Generator	Mixing Operations Spills from containers Spills from cleaning equipment	Citric Acid	Used once every 3- to 5-years to clean Heat Recovery Steam Generators. Training personnel for this operation. HAZMAT teams at the site. Storm water drains in plant go to evaporation ponds.
Hydroxy Acetic Acid Cleaning Operation	Initial Cleaning of the Heat Recovery Steam Generator	Spills from containers Spills from cleaning equipment	Hydroxy Acetic Acid	Used only during initial cleaning of the Heat Recovery Steam Generators. Training personnel for this operation. HAZMAT teams at the site. Storm water drains in plant go to evaporation ponds.
Formic Acid Cleaning Operation	Initial Cleaning of the Heat Recovery Steam Generator	Spills from containers Spills from cleaning equipment	Formic Acid	Used only during initial cleaning of the Heat Recovery Steam Generators. Training personnel for this operation. HAZMAT teams at the site. Storm water drains in plant go to evaporation ponds.
Hydraulic Oil	Filling Operation	Overfilling hydraulic reservoirs Rupture of hydraulic lines	High Flash Point Petroleum Hydrocarbon-Based Oil	Commercially manufactured hydraulic system. Relatively small quantities used at specific locations. Hydraulic areas monitored in control room or by operations personnel Daily inspection by operational personnel. Routine equipment maintenance schedule. Training of operational personnel and HAZMAT teams. Storm water drains go to evaporation ponds.

4.0 STORM WATER MANAGEMENT CONTROL

4.1 Preventive Maintenance

Caithness will maintain all equipment according to the facility's Maintenance Plan. The Maintenance Plan will specify routine maintenance and servicing of the plant facilities and equipment at regular intervals based on manufacturers' recommendations or good engineering practices. This preventive maintenance program will be instrumental in preventing a breakdown in the facility or equipment that could result in impact to the storm water drainage system and accidental leaks to off-site locations. Additionally, this preventive maintenance program will detect small leaks before they become major items of concern.

If maintenance, operation, control room, or other plant personnel notice unusual operation characteristics from equipment or leaks, they are trained to notify appropriate plant supervisory personnel. The situation will be immediately investigated and necessary actions taken. Action can include a shutdown of equipment or submittal of a repair order to the Maintenance Supervisor to correct the problem. This procedure should also reduce potential spill situations.

4.2 Good Housekeeping

The maintenance of a clean and orderly facility will be crucial to the success of a well planned and implemented SWPPP. It will be important to manage hazardous materials and waste properly. Management of chemicals at the plant will be maintained by proper indoor and outdoor storage in an appropriately labeled container. This proper storage will be maintained by good housekeeping practices. Pieces of equipment, accessory, or discarded items will not be left exposed in an improper location or container so that a leak could impact storm water.

The Environmental/Safety Engineer will conduct weekly environmental audits of the plant. These audits will consist of inspection of plant locations or equipment with potential impact to the storm water system. Additionally, these inspections will address pollution prevention and noncompliance issues. If a pollution prevention issue or noncompliance items are observed during one of these inspections, corrective action will be taken to remedy the issue or item.

Plant personnel also will be instructed and trained to recognized potential problems and to report them to management immediately so appropriate action takes place.

4.3 Spill Prevention and Response

Caithness will develop a facility wide Spill Prevention Control and Countermeasure (SPCC) plan and other documents for preventing and responding to petroleum hydrocarbon and other chemical spills. These various plans and regulatory requirements will be incorporated as part of the facility operating procedures. These plans and documents will address spills, spill controls, spill response, and decontamination equipment as well as procedures to deal with chemical spills.

A spill response team will be HAZWOPER trained in hazardous material handling and spill response. Caithness will address spill prevention and response as part of its hazardous materials and waste management program. These programs will be administered by the Environmental/Safety Engineer.

4.4 Storm Water Diversion and Management Practices

4.4.1 Main Plant Area Drainage and Evaporation Pond Design

Caithness plans to construct a storm water system for the power plant site which will divert all liquid from the main plant area to a drainage system that flows directly into the evaporation ponds. The main plant area will be covered with structures for housing plant facilities. The area surrounding these structures will be paved with concrete or asphalt along with roadways in the plant. Remaining areas in the plant will be covered with rock. This will allow for easy control and drainage of liquids from the main plant area into the storm water system and into the evaporation ponds. These evaporation ponds will be regulated separately under an Aquifer Protection Plan permit issued by the ADEQ.

The Project will have two evaporation ponds to accept and evaporate the plant operation wastewater and storm water runoff from the main plant area. Each pond will have the same approximate surface area. The total combined evaporative surface area of the ponds is approximately18 acres, with each pond covering about nine acres. Current analysis indicated that this acreage will be sufficient to evaporate all of the plant wastewater flow and direct rainfall into the ponds.

The inside depth of each cell will provide:

- Sufficient depth to provide storage of the entire salt production for a period of 40 years plus 50 percent.
- Sufficient additional depth to provide for normal water level variation throughout the year due to variations in plant inflow, rainfall, and the evaporation rates.
- Sufficient additional depth to provide for the increase in water level that would occur when the evaporation rate is 90 percent of the mean evaporation rate for two years in a row.

- Sufficient depth to provide additional storage capacity for increased inflow for a minimum of two-weeks assuming the brine concentration and reverse osmosis (RO) equipment are both inoperable.

- Sufficient depth to provide an allowance for an increase in water level during pond maintenance, assuming one cell will need maintenance for a two-month period.

- Sufficient additional depth to provide for the 100 year rainfall on top of the maximum water level resulting from water level variations.

- Sufficient freeboard above the maximum water level to provide the greater of 24 inches or the height of the wind wave run-up plus 12 inches.

The ponds will be constructed partially above grade and partially below grade to balance the earthwork. The above grade earthwork will be compacted according to good engineering practice to meet design requirements.

Each cell will be provided with two liners. A leak detection and removal system will be installed between the liners. The outer liner will consist of 12 inches of clay or an alternative material with a hydraulic conductivity of 1×10^{-6} cm/sec. The outer layer and inner will be covered with a 60 mil high-density polyethylene (HDPE) geomembrane. The HDPE will be textured on both sides to increase frictional resistance to slippage of cover material.

The interior bottom of the pond will be covered with a 12 inch thick layer of prepared cover material. The maximum particle size of this cover material will be ½ inch to prevent wind uplifting, mechanical damage, and other types of potential damage.

Interior slopes of the pond will be covered with a 12 inch thick layer of prepared cover material, a layer of 10 oz sewn polypropylene geotexitle, and a minimum of a nine inch thick layer of rip rap with an average size of 6 inches. The size of the rip rap may be increased due to surface waves in the pond. Exterior slopes of the dike will be covered with a 6-inch layer of gravel or crushed rock for wind and rainwater protection.

Each cell will be provided with an independent leak detection and removal system (LDRS) between the inner and outer liners. This LDRS will be designed to detect a leak in the inner liner within one-hour of a leak occurrence. An HDPE geonet with a minimum thickness of 150 mils will be installed between the liners to collect leakage through the inner liner and carry the liquids to a drainage trench located in the center bottom of each cell. The drainage trench will be rock-filled and have a minimum of a six inch diameter perforated HDPE pipe. A geotextile cushion layer will be placed around the rock to prevent punctures of the geomembrane liner.

The cells will have a rock-filled collection sump. This collection sump will have a minimum depth of 30 inches. A perforated HDPE sump pipe will be installed inside of each sump. Each sump pipe will extend up the side slope to a concrete access area. A horizontal sump pump will be installed inside each sump pipe to pump out leakage and return it back into the cell. Each pump will have a local mounted controller with instrumentation. Each pump will be sized to remove twice the maximum leakage resulting from one 100 millimeter diameter hole per acre with the pond at its maximum water level.

The pond influent system will be designed so that each cell can operate independently should a shutdown of a cell for maintenance be required. Discharge into each cell will be via pipes installed over the top of a dike and into each cell.

4.4.2 Other Plant Drainage

It is possible that some of the drainage outside of the main plant area may be diverted to the evaporation ponds located west of the facility. The location of the ponds is generally at the lowest plant elevation. Therefore, rainwater runoff will flow by gravity toward this location and be retained in the ponds.

Contamination of this area from chemicals used at the plant is not anticipated, because no chemicals are stored away from the main plant area. Except for the evaporation ponds, most of this area is compacted native soil. Heavy rainfall in this area will cause minor localized soil erosion. This soil erosion will result in an increase in turbidity as a result of silt and clay in the runoff water. The silt and clay material, however, will be collected and allowed to settle in the ponds or containment area if this system is constructed at the site.

Some localized areas of the plant will drain into drainage channels located along the western portion of the plant. The area inside of the Big Sandy Power, LLC plant property that drains into these channels should be small and consist of undeveloped fringe location along the east, south, and west borders of the property. None of these fringe areas will contain chemicals used at the plant or have uncontrolled main plant drainage. Therefore, pollutants from the main plant area should not affect these local drainage channels.

Portions of the plant may be landscaped with native vegetation. This vegetation could be irrigated with a drip type system to minimize water consumption and runoff if a water system is needed for the vegetation. Therefore, runoff and resultant pollution to local storm water channels along the perimeter of the property are not anticipated.